St. Maries River Subbasin Assessment and Total Maximum Daily Loads

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Abbreviations, Acronyms, and Symbols

303(d)	Refers to section 303 subsection (d) of the Clean Water Act, or a list of impaired water bodies required by this section
µ	micro, one-one thousandth
µg/L	micrograms per liter
§	Section (usually a section of federal or state rules or statutes)
AFDM	Ash-free dry mass
BLM	United States Bureau of Land Management
BMP	best management practice
BURP	Beneficial Use Reconnaissance Program
C	Celsius
CFR	Code of Federal Regulations (refers to citations in the federal administrative rules)
cfs	cubic feet per second
chl *a*	chlorophyll *a*
cm	centimeters
CWA	Clean Water Act
CWE	cumulative watershed effects
DEQ	Department of Environmental Quality
E. Coli	*Escherichia coli* bacteria
EPA	United States Environmental Protection Agency
GIS	Geographical Information Systems
GPD	Gallons per day
IDAPA	Refers to citations of Idaho administrative rules
IDL	Idaho Department of Lands
INFISH	The federal Inland Native Fish Strategy
KEA	Kootenai Environmental Alliance
km	kilometer
L	liter
LA	load allocation
LC	load capacity
m	meter
mg	milligram
mi	mile
mi^2	square miles
mg/L	milligrams per liter
mL	milliliter
mm	millimeter
MOS	margin of safety

MWMT maximum weekly maximum temperature

N/A not applicable

NB natural background

nd no data (data not available)

NPDES National Pollutant Discharge Elimination System

NRCS Natural Resource Conservation Service

NTU nephlometric turbidity unit

PCR primary contact recreation

RUSLE Revised Universal Soil Loss Equation

SCC Soil Conservation Commission

SCR secondary contact recreation

SFI DEQ's stream fish index

SHI DEQ's stream habitat index

SMI DEQ's stream macroinvertebrate index

SRW Special Resource Water

SSTEMP Stream Segment Temperature Model

STATSGO State Soil Geographic Database

TKN total Kjeldahl nitrogen

TMDL total maximum daily load

TSS total suspended solids

t/y tons per year

U.S. United States

USC United States Code

USDA United States Department of Agriculture

USFS United States Forest Service

USGS United States Geological Survey

WAG Watershed Advisory Group

WBAGII *Waterbody Assessment Guidance, Version II*

WLA wasteload allocation

Executive Summary

The federal Clean Water Act (CWA) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters (33 USC § 1251.101). States and tribes, pursuant to Section 303 of the CWA are to adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the waters whenever possible. Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize water bodies that are water quality limited (i.e., water bodies that do not meet water quality standards). States and tribes must periodically publish a priority list of impaired waters, currently every two years. For waters identified on this list, states and tribes must develop a total maximum daily load (TMDL) for the pollutants, set at a level to achieve water quality standards. This document addresses the water bodies in the St. Maries Subbasin that have been placed on what is known as the "303(d) list."

This subbasin assessment and TMDL analysis has been developed to comply with Idaho's TMDL schedule. This assessment describes the physical, biological, and cultural setting; water quality status; pollutant sources; and recent pollution control actions in the St. Maries Subbasin located in northern Idaho. The first part of this document, the subbasin assessment, is an important first step in leading to the TMDL. The starting point for this assessment was Idaho's current 303(d) list of water quality limited water bodies. Eighteen segments of the St. Maries Subbasin were listed on this list. The subbasin assessment portion of this document examines the current status of 303(d) listed waters, and defines the extent of impairment and causes of water quality limitation throughout the subbasin. The loading analysis quantifies pollutant sources and allocates responsibility for load reductions needed to return listed waters to a condition of meeting water quality standards.

Subbasin at a Glance

Hydrologic Unit Code 17010304

Water Quality Limited Segments.....18

Beneficial Uses Affected.....Cold water, salmonid spawning, primary and secondary contact recreation

Pollutants of Concern.....Sediment, nutrients, bacteria, dissolved oxygen, temperature

Known Land Uses.....Forestry, agriculture, recreation

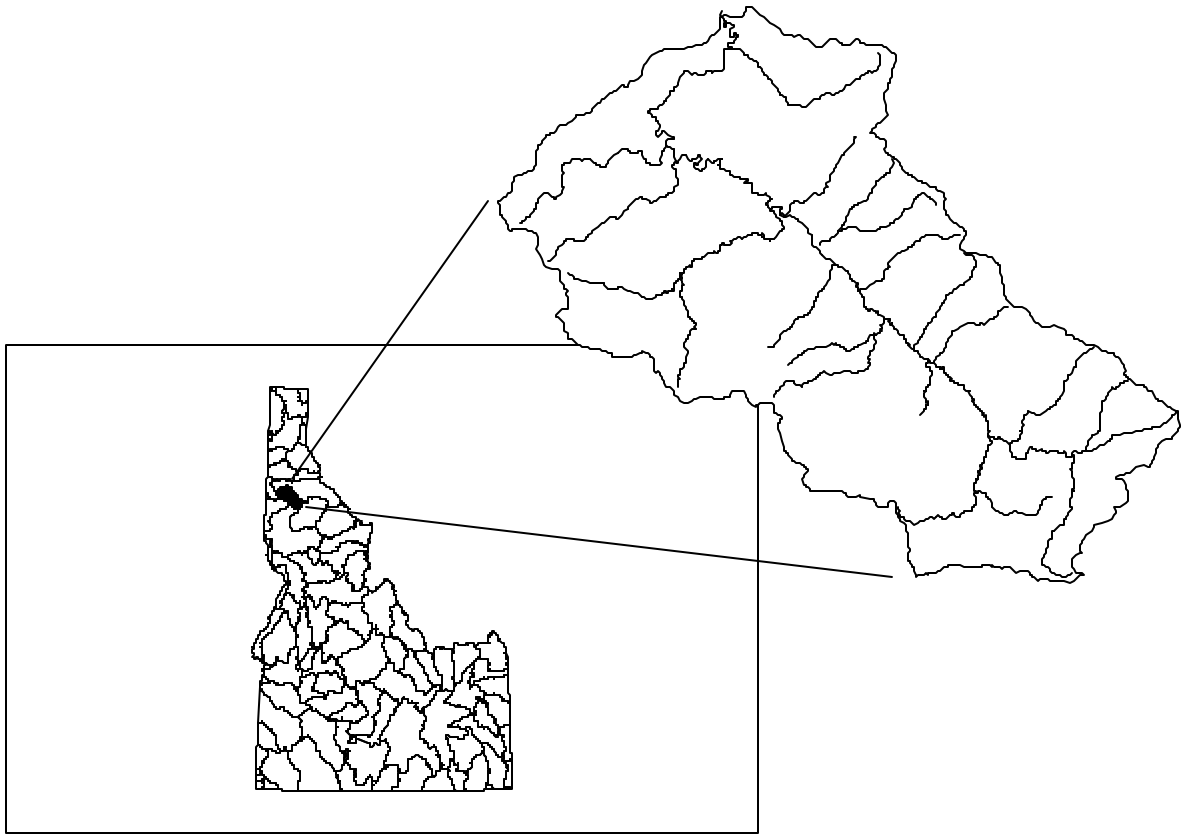

Figure A. Location of St. Maries Subbasin

Key Findings

The St. Maries River watershed remained in a relatively natural condition until the early twentieth century when miners, loggers, and ranchers began to settle the area. It has a history of timber harvest, grazing, and placer recovery of garnets and gold. Streams in the subbasin are 303(d) listed for sediment, temperature, habitat alteration, nutrients, bacteria and dissolved oxygen. Sixteen of the eighteen segments are listed for sediment, while nine are listed for temperature, eight are listed for habitat alteration, four for nutrients, and one each are listed for dissolved oxygen and bacteria. Sediment originates in the basin primarily from eroding banks, road crossings, and encroachments. Temperature is most affected by stream shading. Nutrients and bacteria arise from livestock and human wastes, while dissolved oxygen is affected by discharge of oxygen demanding materials that, in the St. Maries Subbasin, are discharged from wastewater treatment facilities. Impairment of cold water aquatic life has been demonstrated by composite scores of fish, macroinvertebrate and habitat indices. These scores generally indicate full support in the headwaters, but reveal use impairment in the downstream reaches of the both the tributaries and the river itself.

An assessment of temperature data indicates that all streams assessed exceed temperature standards. Dissolved oxygen was not found to be a limiting factor in Santa Creek, while bacteria were not found to limit contact recreation in Gramp Creek. Although segments are listed for habitat alteration, habitat alteration is not an effect that can be allocated in a TMDL. An assessment of nutrient data indicates that none of the stream segments listed for nutrients are impaired by nutrients. Sediment data and model results were assessed. Residual pool volumes generally indicate that many of the downstream reaches of the tributaries and the river have relatively low residual pool volumes. Sediment yield monitoring indicates that Alder, Charlie, Santa, Tyson, and Carpenter Creeks and the St. Maries River including its West and Middle Forks have yields well in excess of thresholds expected to cause water quality impairment. John, Emerald, Renfro, Crystal, and Thorn Creeks have sediment yields close to or slightly above the threshold found on streams supporting the cold water aquatic life.

Since the main stem of the St. Maries River is sediment limited, a sediment TMDL is required for the entire St. Maries Subbasin. Temperature TMDLs are required for Gold Center Creek, including Gramp, Flewsie, Emerald, and Santa Creeks as well as the St. Maries River and its West and Middle Forks.

Table A. Streams and pollutants for which TMDLs were developed.

Stream	Segment ID Number	1998 303(d) Boundaries	Pollutant(s)
St. Maries River	3579	Town of Mashburn to St. Joe River	Sediment, temperature
St. Maries River	3580	Town of Clarkia to town of Mashburn	Sediment, temperature
West Fork St. Maries River	3581	Headwaters to St. Maries River	Sediment, temperature
Middle Fork of the St. Maries River	3594	Headwaters to St. Maries River	Sediment, temperature
Santa Creek	3585	Headwaters to St. Maries River	Sediment, temperature
Carpenter Creek	3591	Headwaters to St. Maries River	Sediment
Emerald Creek	3593	East Fork – Headwaters to St. Maries River	Sediment, temperature
Gold Center Creek	3596	Windy Creek to Middle Fork of the St. Maries River	Temperature
Flewsie Creek	3596	Headwaters Creek to Middle Fork of the St. Maries River	Temperature
Alder Creek	3583	Headwaters to St. Maries River	Sediment
Tyson Creek	3589	North Fork Tyson Creek to St. Maries River	Sediment
Thorn Creek	3582	Headwater to St. Maries River	Sediment
Renfro Creek	3588	Headwaters to Davis Creek	Sediment
Crystal Creek	3590	Headwaters to St. Maries River	Sediment
Charlie Creek	3587	Headwaters to Santa Creek	Sediment
John Creek	3584	Unnamed tributary 7.5km upstream to St. Maries River	Sediment
Gramp Creek	3598	Headwaters to Gold Center Creek	Temperature

Table B. Summary of assessment outcomes.

Waterbody Segment	Assess-ment Unit	Pollutant	TMDL(s) Completed	Recommended Changes to 303(d) List	Recommended Schedule Changes	Justification/ Notes[1]
St. Maries River 17010304 3579 17010304 3580	PN015 _05	Sediment	1 (for entire watershed)	Change unknown pollutant to temperature and/or sediment	None	N/A
St. Maries River 17010304 3579 17010304 3580	PN015 _05	Temperature	1 (for entire watershed)	Change unknown pollutant to temperature and/or sediment	None	N/A
St. Maries River 17010304 3579 17010304 3580	PN015 _05	Nutrients	0	Delist for nutrients	None	Periphyton data do not indicate nuisance levels
West Fork St. Maries River 17010304 3581	PN017 _02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
West Fork St. Maries River 17010304 3581	PN017 _02	Temperature	1	None	None	N/A
Middle Fork St. Maries River 17010304 3594	PN018 _02/ 04/05	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Middle Fork St. Maries River 17010304 3594	PN018 _02/ 04/05	Temperature	1	None	None	N/A
Thorn Creek 17010304 3582	PN026 _02	Nutrients	0	Delist for nutrients	None	Periphyton data do not indicate nuisance levels
Thorn Creek 17010304 3582	PN026 _02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Alder Creek 17010304 3583	PN08_ 02	Nutrients	0	Delist for nutrients	None	Periphyton data do not indicate nuisance levels

Table B, continued.

Waterbody Segment	Assess-ment Unit	Pollutant	TMDL(s) Completed	Recommended Changes to 303(d) List	Recommended Schedule Changes	Justification/ Notes[1]
Alder Creek 17010304 3583	PN08_ 02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
John Creek 17010304 3584	PN09_ 02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Santa Creek 17010304 3585	PN010 _04	Dissolved oxygen	0	Delist for dissolved oxygen	None	Dissolved oxygen data meet standard
Santa Creek 17010304 3585	PN010 _04	Nutrients	0	Delist for nutrients	None	Periphyton data do not indicate nuisance levels
Santa Creek 17010304 3585	PN010 _04	Temperature	1	None	None	N/A
Santa Creek 17010304 3585	PN010 _02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Charlie Creek 17010304 3587	PN011 _02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Renfro Creek 17010304 3588	PN024 _02/03	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Tyson Creek 17010304 3589	PN013 _02/03	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Crystal Creek 17010304 3590	PN023 _02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Carpenter Creek 17010304 3591	PN014 _02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL

Table B, continued.

Waterbody Segment	Assess-ment Unit	Pollutant	TMDL(s) Completed	Recommended Changes to 303(d) List	Recommended Schedule Changes	Justification/ Notes[1]
Emerald Creek 17010304 3593	PN016 _03	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Emerald Creek 17010304 3593	PN016 _03	Temperature	1	None	None	N/A
Gold Center Creek 17010304 3596	PN019 _02/03	Sediment	0	Delist for sediment	None	WBAGII and sediment model results
Gold Center Creek 17010304 3596	PN019 _02/03	Temperature	1	None	None	N/A
Flewsie Creek 17010304 7596	PN018 _02	Sediment	0	Delist for sediment	None	WBAGII and sediment model results
Flewsie Creek 17010304 7596	PN018 _02	Temperature	1	None	None	N/A
Gramp Creek 17010304 7598	PN019 _02	Bacteria	0	Delist for bacteria	None	Bacteria standard not exceeded
Gramp Creek 17010304 7598	PN019 _02	Sediment	0	Delist for sediment	None	WBAGII and sediment model results
Gramp Creek 17010304 7598	PN019 _02	Temperature	1	None	None	Covered by Gold Center Creek Temperature TMDL

[1]WBAGII – *Water Body Assessment Guidance*, Version II.